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10/086,780	02/28/2002	Outi Hiironniemi	50072.4US01	8960

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EXAMINER	
NGUYEN, TOAN D	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,780	HIIRONNIEMI, OUTI	
	Examiner	Art Unit	
	Toan D. Nguyen	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-17 and 19-22* is/are rejected.

7)☒ Claim(s) *4,5 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/16/02,6/13/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the comparator in claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 1-22 are objected to because of the following informalities:

In claim 1 line 4, it is suggested to change "each packet" to --- each of the received packet ---. Similar problem exist in claim 1 line 15 and line 16, claim 5 line 5, claim 6 line 3, claim 18 line 5, claim 19 line 3, and claim 22 line 4, line 17 and line 18.

In claim 1 line 7, it is suggested to change "a received packet" to --- the received packet ---. Similar problem exist in claim 22 line 8.

In claim 1 line 14, it is suggested to change "the packet" to --- the received packet ---. Similar problem exist in claim 2 line 1.

In claim 1 line 16, it is suggested to change "each queue" to --- each said queue ---. Similar problem exist in claim 3 line 2 and line 4, line 6 line 3, claim 11 line 19 and line 21, claim 16 line 2 and line 3, and claim 22 line 17 and line 19.

In claim 3 line 1, it is suggested to change "a weight" to --- the weight ---.

In claim 3 line 2, it is suggested to change "each received packet in each queue" to --- each of the received packet in each said queue ---. Similar problem exist in claim 11 line 19.

In claim 4 line 2, it is suggested to change "operational logic" to --- the operational logic ---.

In claim 11 line 6, it is suggested to change "each received packet" to --- each of the received packet ---. Similar problem exist in claim 13 line 2, and claim 16 line 3.

In claim 16 line 4, it is suggested to change "each weight" to --- each of the weight ---.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claim 11-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the limitation "the forwarder" inline 20. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 6-9, 11, 13-17, 19, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (US 6,292,489) in view of Duong Van (US 6,600,752) and further in view of Scheinbart et al. (US 6,601,150).

For claims 1-2 and 7, Fukushima et al. disclose router device and network system using the same, comprising:

(a) mapping (figure 1, reference 9) each received packet to at least one of a plurality of queues (figure 1, reference 6Rx), wherein the mapping is based on a kind of data (figure 1, reference 3Rx) included with each packet (col. 4 lines 17-19 and col. 4 lines 20-22); and

(d) forwarding each packet in each queue along a path towards the final destination (figure 1, reference 6Tx), wherein the ordering of the forwarding of each packet is in accordance with a weight associated with each queue (col. 4 lines 23-26).

However, Fukushima et al. do not expressly disclose:

(b) providing a threshold that is compared to a differential that represents loading differences between a queue associated with the kind of data included in a received packet and another queue that is unassociated with the kind of data included in the received packet, wherein the queue associated with the kind of data included in the received packet is overloaded when the differential exceeds the threshold;

(c) when the differential exceeds the threshold and operational logic is valid, automatically changing the mapping of the received packet from the queue to the other queue, wherein the other queue is less loaded than the queue associated with the kind of data included in the packet when the differential exceeds the threshold.

In an analogous art, Duong Van disclose:

(b) providing a threshold (threshold "1") that is compared to a differential that represents loading differences between a queue (low priority queue, reference 12) associated with the kind of data included in a received packet and another queue (high priority queue, reference 20) that is unassociated with the kind of data included in the received packet, wherein the queue (low priority queue, reference 12) associated with the kind of data included in the received packet is overloaded (col. 5 lines 1-3) when the differential exceeds the threshold (figure 1, col. 3 line 65 to col. 4 line 17);

(c) when the differential exceeds the threshold (threshold "1"), automatically changing the mapping of the received packet from the queue (low priority queue, reference 12) to the other queue (high priority queue, reference 20), wherein the other queue is less loaded than the queue associated with the kind of data included in the

packet when the differential exceeds the threshold (col. 4 lines 17-24). Duong Van discloses wherein the packet is one of an Internet Protocol (IP) packet and an Asynchronous Transfer Mode (ATM) packet (col. 1 lines 13-15 as set forth in claim 2); further comprising enabling the threshold to be set to a sufficiently large value to prevent overloading of the other queue caused by relatively frequent changing of the mapping of received packets to the other queue (col. 4 line 13-23 as set forth in claim 7).

One skilled in the art would have recognized a threshold, and would have applied Duong Van's scheme for reducing or preventing congestion in packet switched networks in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Duong Van's method for reducing excess queue time in communication nodes in Fukushima et al.'s router device and network system using the same with the motivation being to a scheme for congestion control (col. 3 lines 7-8).

Furthermore, Fukushima et al. in view of Duong Van do not expressly disclose operational logic is valid. In an analogous art, Scheinbart et al. disclose operational logic is valid (col. 3 lines 27-31).

One skilled in the art would have recognized operational logic is valid, and would have applied Scheinbart et al.'s FIFO manager in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Scheinbart et al.'s memory management technique for maintaining packet order in a packet processing system in Fukushima et al.'s router device and network system

using the same with the motivation being included a VALID indicator for indicating whether the packet stored in the corresponding FIFO element is ready to be forwarded (col. 3 lines 31-33).

For claim 3, Fukushima et al. disclose further comprising providing a weight for each queue that is associated with each kind of data, wherein resources for forwarding each received packet in each queue are allocated in accordance with each weight provided to each queue, wherein the weight associated with each queue is unchanged during the forwarding (figure 1, col. 4 lines 51-63).

For claim 6, Fukushima et al. disclose further comprising enabling automated provisioning of at least one of a forwarding priority value, traffic aggregation value and weight for each queue based on the kind of data included in each packet (figure 1, col. 4 lines 51-63).

For claim 8, Fukushima et al. disclose further comprising employ a connection associated with the received packet to determine the kind of data included in the received packet (figure 1, reference 3Rx) (col. 4 lines 17-19 and col. 4 lines 20-22).

For claim 9, Fukushima et al. disclose further comprising examining the content of the received packet to identify the kind of data included in the received packet (col. 4 lines 17-19 and col. 4 lines 20-22).

As far as understood with respect to claims 11, 17 and 21, Fukushima et al. disclose router device and network system using the same, comprising:

(a) a transceiver (figure 1, references 2 and 11) for receiving and transmitting each packet over each network coupled to the router (figure 1, reference 1) (col. 4 line 15-16 and col. 4 line 26);

(b) a mapper (figure 1, reference 9) that maps each received packet to at least one of a plurality of queues (figure 1, reference 6Rx), wherein the mapping is based on a kind of data (figure 1, reference 3Rx) included with each received packet (col. 4 lines 17-19 and col. 4 lines 20-22).

However, Fukushima et al. do not expressly disclose:

(c) a comparator that compares a provided threshold to a differential that represents loading differences between a queue associated with the kind of data included in the received packet and another queue that is unassociated with the kind of data included in the received packet, wherein the queue associated with the kind of data included in the received packet is overloaded when the differential exceeds the threshold;

(d) a remapper that automatically changes the mapping of the received packet from the queue to the other queue when the differential exceeds the threshold and operational logic is valid, wherein the other queue is less loaded than the queue associated with the kind of data included in the packet when the differential exceeds the threshold; and

(e) a scheduler that forwards each received packet in each queue along a path towards the final destination, wherein the forwarder orders the forwarding of each received packet in accordance with a weight associated with each queue.

In an analogous art, Duong Van disclose:

(c) compare a provided threshold (threshold "1") to a differential that represents loading differences between a queue (low priority queue, reference 12) associated with the kind of data included in the received packet and another queue (high priority queue, reference 20) that is unassociated with the kind of data included in the received packet, wherein the queue associated with the kind of data included in the received packet is overloaded (col. 5 lines 1-3) when the differential exceeds the threshold (figure 1, col. 3 line 65 to col. 4 line 17);

(d) automatically changes the mapping of the received packet from the queue (low priority queue, reference 12) to the other queue when the differential exceeds the threshold, wherein the other queue (high priority queue, reference 20) is less loaded than the queue associated with the kind of data included in the packet when the differential exceeds the threshold (col. 4 lines 17-24); and

(e) a scheduler (figure 1, reference 18) that forwards each received packet in each queue (figure 1, High priority queue, reference 20 and Low priority queue, reference 12) along a path towards the final destination, wherein the forwarder orders the forwarding of each received packet in accordance with a weight associated with each queue (col. 4 lines 3-12). Duong Van discloses enabling the threshold to be set to a sufficiently large value to prevent overloading of the other queue caused by relatively frequent changing of the mapping of received packets to the other queue (col. 4 line 13-23 as set forth in claim 17), and wherein the packet is one of an Internet Protocol (IP) packet and an Asynchronous Transfer Mode (ATM) packet (col. 1 lines 13-15 as set forth in claim 21).

Duong Van does not expressly disclose a comparator, and a remapper. To include the comparator, and the remapper would have been obvious to one of ordinary skill in the art because Duong Van disclose comparing a provided threshold (threshold "1") to a differential that represents loading differences (comparator means in limitation (c)), and automatically changes the mapping of the received packet from the queue (low priority queue, reference 12) to the other queue (remapper means in the limitation (d)).

One skilled in the art would have recognized a threshold, and would have applied Duong Van's scheme for reducing or preventing congestion in packet switched networks in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Duong Van's method for reducing excess queue time in communication nodes in Fukushima et al.'s router device and network system using the same with the motivation being to a scheme for congestion control (col. 3 lines 7-8).

Furthermore, Fukushima et al. in view of Duong Van do not expressly disclose operational logic is valid. In an analogous art, Scheinbart et al. disclose operational logic is valid (col. 3 lines 27-31).

One skilled in the art would have recognized operational logic is valid, and would have applied Scheinbart et al.'s FIFO manager in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Scheinbart et al.'s memory management technique for maintaining packet order in a packet processing system in Fukushima et al.'s router device and network system using the same with the motivation being included a VALID indicator for indicating

whether the packet stored in the corresponding FIFO element is ready to be forwarded (col. 3 lines 31-33).

For claim 13, Fukushima et al. disclose further comprising a classifier (figure 1, 3Rx) for determining the kind of data included in each received packet (col. 4 lines 17-40).

For claim 14, Fukushima et al. disclose wherein the classifier employs a connection associated with the received packet to determine the kind of data included in the received packet (col. 4 lines 17-19 and col. 4 lines 20-40).

For claim 15, Fukushima et al. disclose wherein the classifier examines the content of the received packet to identify the kind of data included in the received packet (figure 1, col. 4 lines 32-40).

For claim 16, Fukushima et al. disclose further comprising a weighter that enables a weight to be provided for each queue that is associated with each kind of data, wherein resources for forwarding each received packet in each queue are allocated in accordance with each weight provided to each queue (figure 1, col. 4 lines 51-63).

For claim 19, Fukushima et al. disclose further comprising a provisioner for automatically providing at least one of a forwarding priority value, traffic aggregation value and weight for each queue based on the kind of data included in each packet. (figure 1, col. 4 lines 51-63).

For claim 22, Fukushima et al. disclose router device and network system using the same, comprising:

(a) means for mapping (figure 1, reference 9) each received packet to at least one of a plurality of queues (figure 1, reference 6Rx), wherein the mapping is based on a kind of data (figure 1, reference 3Rx) included with each packet (col. 4 lines 17-19 and col. 4 lines 20-22); and

(d) means for forwarding each packet in each queue along a path towards the final destination (figure 1, reference 6Tx), wherein the ordering of the forwarding of each packet is in accordance with a weight associated with each queue (col. 4 lines 23-26).

However, Fukushima et al. do not expressly disclose:

(b) means for providing a threshold that is compared to a differential that represents loading differences between a queue associated with the kind of data included in a received packet and another queue that is unassociated with the kind of data included in the received packet, wherein the queue associated with the kind of data included in the received packet is overloaded when the differential exceeds the threshold;

(c) means for automatically changing the mapping of the received packet from the queue to the other queue when the differential exceeds the threshold and operational logic is valid, wherein the other queue is less loaded than the queue associated with the kind of data included in the packet when the differential exceeds the threshold.

In an analogous art, Duong Van disclose:

(b) means for providing a threshold (threshold "1") that is compared to a differential that represents loading differences between a queue (low priority queue, reference 12) associated with the kind of data included in a received packet and another queue (high priority queue, reference 20) that is unassociated with the kind of data included in the

received packet, wherein the queue (low priority queue, reference 12) associated with the kind of data included in the received packet is overloaded (col. 5 lines 1-3) when the differential exceeds the threshold (figure 1, col. 3 line 65 to col. 4 line 17);

(c) means for automatically changing the mapping of the received packet from the queue (low priority queue, reference 12) to the other queue (high priority queue, reference 20) when the differential exceeds the threshold, wherein the other queue is less loaded than the queue associated with the kind of data included in the packet when the differential exceeds the threshold (col. 4 lines 17-24).

One skilled in the art would have recognized a threshold, and would have applied Duong Van's scheme for reducing or preventing congestion in packet switched networks in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Duong Van's method for reducing excess queue time in communication nodes in Fukushima et al.'s router device and network system using the same with the motivation being to a scheme for congestion control (col. 3 lines 7-8).

Furthermore, Fukushima et al. in view of Duong Van do not expressly disclose operational logic is valid. In an analogous art, Scheinbart et al. disclose operational logic is valid (col. 3 lines 27-31).

One skilled in the art would have recognized operational logic is valid, and would have applied Scheinbart et al.'s FIFO manager in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Scheinbart et al.'s memory management technique for maintaining packet order in

a packet processing system in Fukushima et al.'s router device and network system using the same with the motivation being included a VALID indicator for indicating whether the packet stored in the corresponding FIFO element is ready to be forwarded (col. 3 lines 31-33).

5. Claims 10, 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukushima et al. (US 6,292,489) in view of Duong Van (US 6,600,752) and Scheinbart et al. (US 6,601,150) further in view of Li et al. (US 6,654,363).

For claims 10 and 20, Fukushima et al. in view of Duong Van and Scheinbart et al. do not disclose subparagraph (a), wherein the mapping is based on Diffsery code points. In an analogous art, Li et al. disclose wherein the mapping is based on Diffsery code points (col. 8 line 48-50). Li et al. disclose further comprising a base station that includes a wireless transceiver for wirelessly communicating with mobile devices and other base stations, wherein the router is internal to the base station (col. 4 lines 5-15 and col. 10 lines 47-48 as set forth in claim 12).

One skilled in the art would have recognized the mapping is based on Diffsery code points, and would have applied Li et al.'s mapping in Fukushima et al.'s router. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use Li et al.'sIP QoS adaptation and management system and method in Fukushima et al.'s router device and network system using the same with the motivation being to offer different levels of forwarding assurances for Ip packets (col. 8 line 51).

Allowable Subject Matter

6. Claim 4-5, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan D. Nguyen whose telephone number is 571-272-3153. The examiner can normally be reached on M-F (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Huy Vu can be reached on 571-272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER